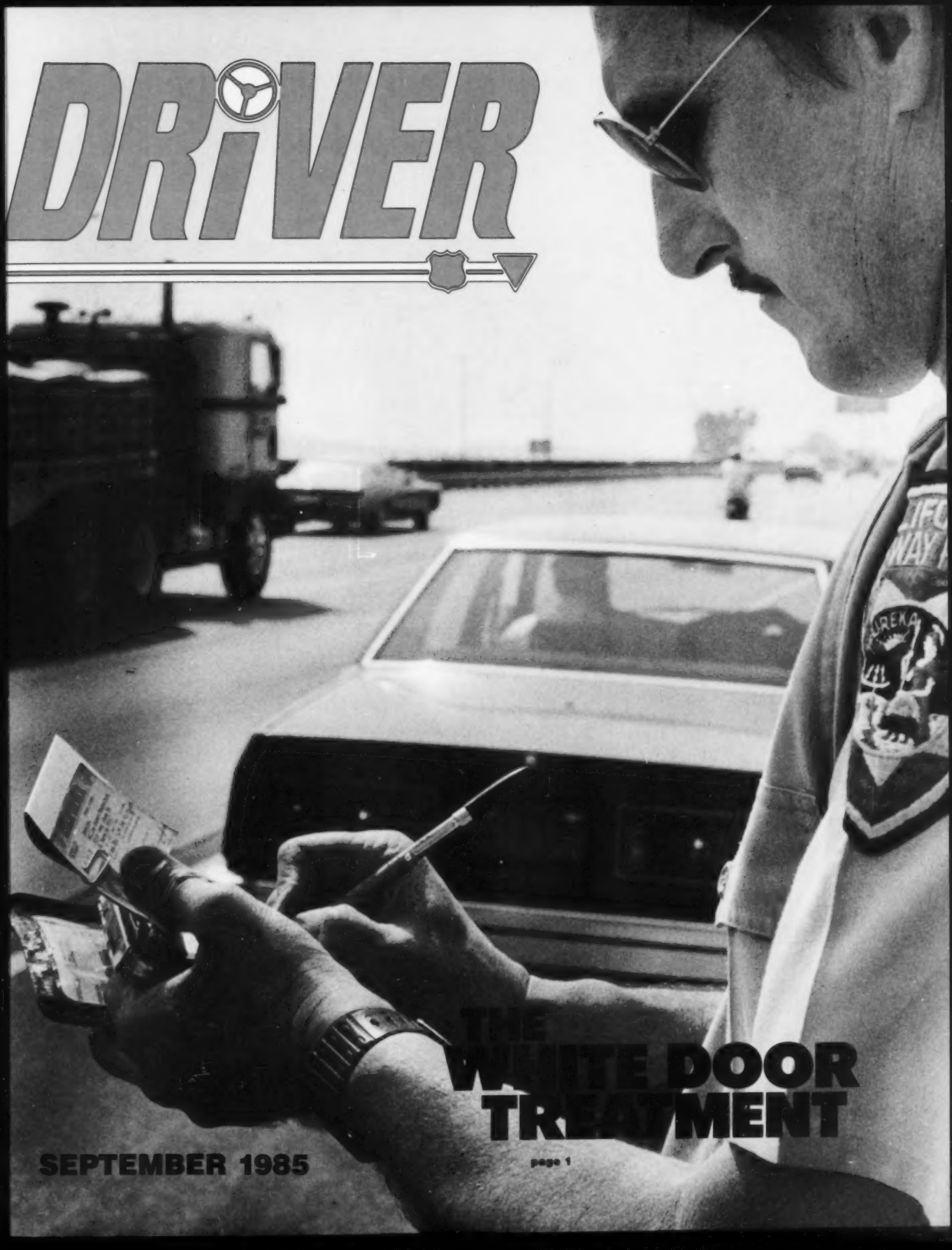
DRIVER



THE WHITE DOOR TREATMENT

Looking for speeders with the California Highway Patrol

the WHITE DOOR treatment

"It's hard to be impartial sometimes."

Officer Harvey Lane of the California Highway Patrol was explaining how the CHP enforces the national maximum speed limit of 55 mph. He said it is difficult to stop a speeder when all the traffic is moving above the limit, because how do you decide who to stop?

His solution is the only logical one: "I just look for people going faster than the flow of traffic."

Despite the fact that many people think the only thing police do is issue tickets, Lane said the average for an eight-hour duty shift is six to 10 tickets, or roughly one an hour. Perhaps eight out of 10 will be speeding tickets. Considering the number of cars on Southern California's highways, and the number of speeders, 10 tickets isn't very many.

Lane said he does listen to what the driver says and he takes into account any extenuating circumstances, so some people get off with just a warning. Sometimes he simply uses the public address system in his patrol car to warn a driver to slow down.

Yet a patrolman's job is to enforce the laws, including the speed limit — and most times when a driver is stopped, he *was* speeding, and he *did* know he was going far above the limit. He just thought he could get away with it.

To get a first-hand look at the "other side" of the speeding question, we rode with Officer Lane on his patrol route one summer afternoon. Lane, a 15-year veteran of the California Highway Patrol, was driving one of the CHP's 5.0-liter Mustangs which is used primarily for speed enforcement. The small, powerful car allows the CHP officers to pursue speeders that might escape some of the slower cars that are used as today's police cruisers.

We left the San Bernardino CHP office to patrol on the freeways. Before we reached the freeway a car made an illegal U-turn in front of us, causing us to slow down to avoid hitting him. The driver was ticketed.

"Quick lane changes and following too close are more dangerous than speeding," Lane said. But, as he was to show us, these are often indicators of speeding as well.

We started out on Interstate 10, going west in the direction of Los Angeles. I-10 is heavily traveled at all times, especially at rush hour, with many hills and dips for overpasses, and it requires a lot of attention to one's driving. Since it is an eight-lane divided freeway with a cement divider topped with a fence, the CHP officers patrol by pacing cars from behind, waiting for them to exceed the speed limit.

At about 3:00, Lane saw a speeder, a man in a sedan traveling in the number two lane of the freeway. He was just cruising along smoothly with his right arm draped across the back of the seat, but he was passing the other traffic.

Lane paced the car at 65 mph, and it was still pulling away. At that point, he turned on the red light. The driver signalled and moved across the three lanes to reach the right shoulder. When Lane exited the patrol car, he circled around behind and came up to the passenger side

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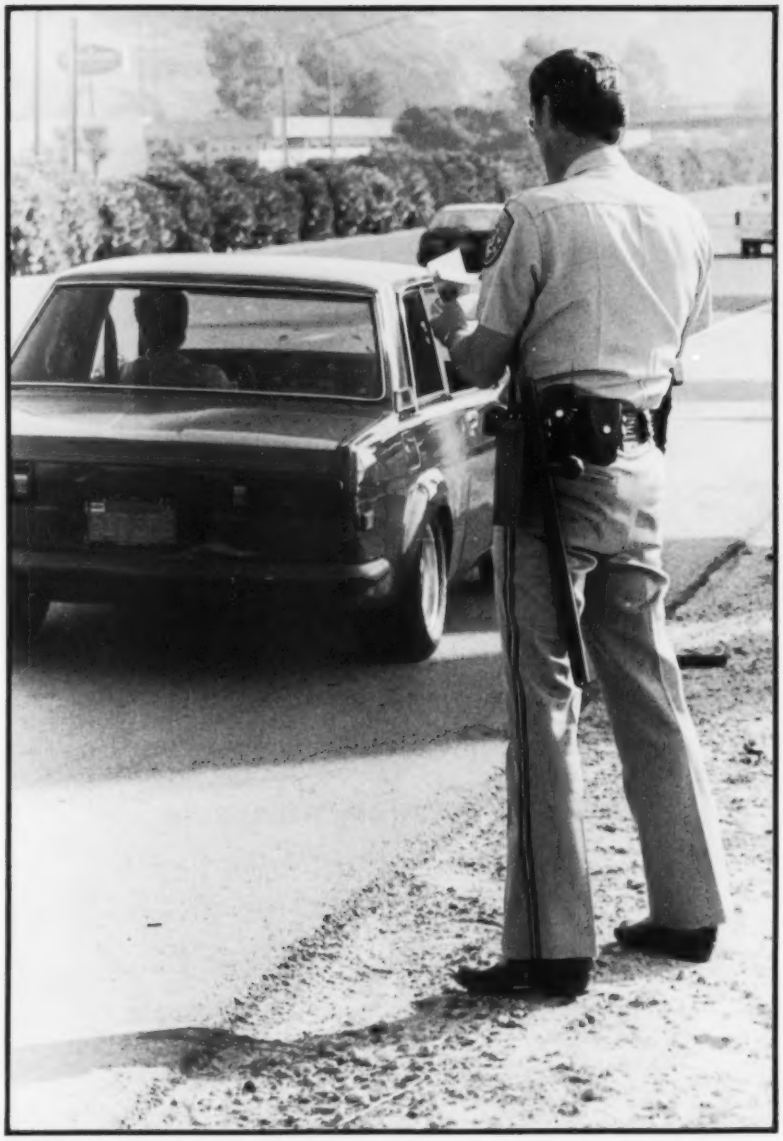

Standing well back from the speeder's car, California Highway Patrol Officer Harvey Lane writes out the citation.

(left)
5.0-liter Mustangs like this one are used by the California Highway Patrol to catch speeders on the freeways.

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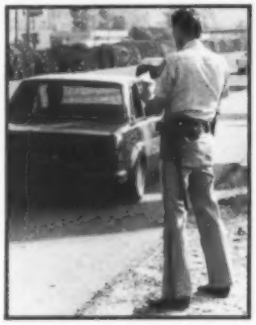

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continued

Officer Harvey Lane makes a point to the speeder about following too closely on a freeway.

of the speeder to keep out of the way of traffic.

"He said he was thinking about his job," said Lane when he returned from giving the man a ticket.

As we continued the patrol, Lane said, "We all have what we call a 'flashpoint.' Mine is 65 miles per hour." The flashpoint is the speed above which the officer will stop the speeder. The CHP officers are allowed to give a warning up to five miles per hour over the speed limit. With the flashpoint of 65, the motorists get plenty of room for any benefit of the doubt, and for individual variations in speedometers.

After we had driven along at the speed limit for a while, Lane took an exit ramp off the freeway and then immediately re-entered. "I have to do that to allow the traffic to readjust itself," he explained. "It gets bunched up behind me as I drive along."

It looked like we had the immediate

continued

Working on freeways is especially hazardous, so the officer exits his patrol car and goes around to the curb side to stay away from the traffic which is going 55 (and probably more) miles per hour.

continued

area of the freeway all to ourselves until one turned and looked behind. Sure enough, a cluster of cars in all four lanes was cruising along at 55 mph. The cars began to speed up just as soon as we were on the exit ramp.

Lane explained that he uses a different method of catching speeders on Interstate 15, which runs north and south, taking travelers from the Los Angeles area out to Las Vegas. The area we were headed toward is so straight and level that drivers can see for long distances — and they can easily spot the highly-visible black and white patrol cars. There are few exits and no cement wall in the median, only a wide expanse of gravel with a few bushes and trees. So the CHP watch for speeders going in the opposite direction and then turn around and follow.

The method works like this: When they spot a car that appears to be speeding, they set the patrol car at their "flash-point," in Lane's case, 65 mph. Then they sight across something in the median, a sign or other object, and draw an imaginary line between themselves and the approaching car. If the other car passes that point before the CHP car, the officer knows the car is speeding. Obviously, this method requires some experience. It also requires a freeway on which the CHP can turn around on the median to catch the speeder.

Lane showed us how it worked, giving the approximate speed of the cars in the southbound lanes. "That one's going about 65 . . . That one was going almost 70, but it probably spotted me, because it slowed down . . ."

He spotted a beat-up Camaro that was going over 70 mph, but at that point he didn't have a place to turn around so he could chase it.

After an eight-mile straightaway, the road narrowed as orange cones obstructed one lane for road work. It was a very quiet crowd out there that day; most of them were behaving themselves.

We exited the freeway and sat on a side road with a good view of the traffic — we were also in plain view of the drivers. Lane said his routine is to drive on the freeway for a while and then pick a spot off the road to watch.

As we waited, he explained the CHP's work at speed enforcement. About four years ago, the local office had six cars on the day shift that were specially dedicated to enforcing the 55 mph speed limit. They averaged 25 tickets each in every eight-hour shift. And this was all in the one area.

"We got a lot of criticism for the speed enforcement," he recalled. "The people accused us of hiding."

As we returned to I-10, Lane was saying, "When the sun goes down you don't have to do anything to find them; they find you. They don't see you and you can just wait for them to go past."

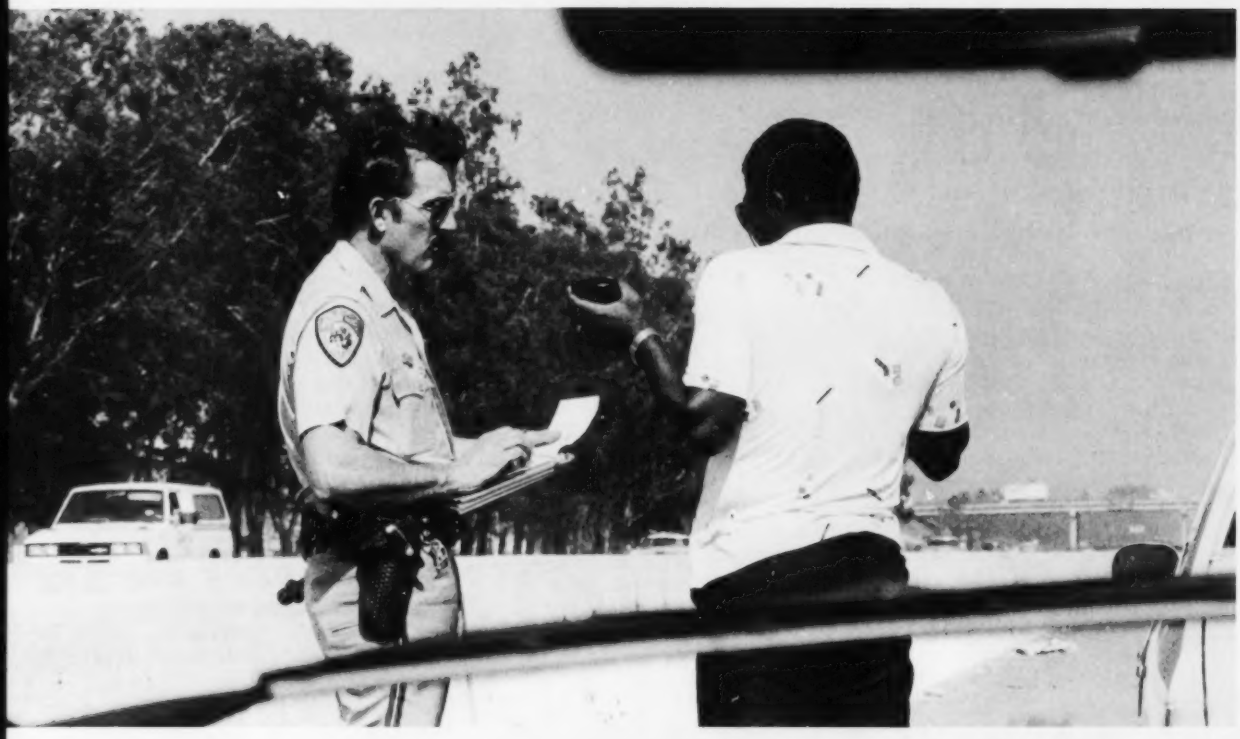
There was still plenty of light as Lane saw a speeder he paced at over 70 mph. He was still going at least 68 as we followed directly behind him. When Lane returned from giving the driver a ticket, he continued.

"Since I issue six to 10 tickets a day, this is about average," he said. At that point we were two hours into the shift and he had stopped three cars, two of which were speeders.

Lane said people are more careful when a policeman is around. "In a patrol car you are very visible," he said.

He is sometimes amused by what he calls 'black-and-white fever.' This is a 'condition' some drivers develop when they see a patrol car. They slow down below the speed limit and they become

Sometimes people have excuses for their speeding . . . and sometimes they just admit it.



very, very cautious about the way they are driving.

"And they're usually the ones who aren't doing anything wrong at all," he said.

Asked about the colorful phrase, he said, "Oh, we have all kinds of expressions like that." He cited another that the CHP officers use: Giving someone 'the white door treatment.' This describes what officers sometimes do when they see someone who is speeding slightly and they want to encourage him to slow down rather than pull him over. They come up and drive alongside him so he sees the patrol car and eases off the gas. It usually works (although we recalled a driver we saw earlier who continued to cruise past us at better than 55, and even waved at us).

When people don't see them, they sometimes think 'There's never a cop around when you need one.' The law enforcement people have their own version of that problem.

"Sometimes I'm worried about driving in my own car," Lane said. "I see more violations when I'm in my own car. Then I always think 'I wish I was on duty now.' "

continued

the white door treatment

continued

Not-So-Trivial Pursuit. This car exceeded the CHP officer's 'flashpoint' of 65 mph, and it was also tailgating other traffic.

Lane said he sometimes will catch some traffic violator, perhaps a speeder who has been slaloming through traffic, and the people who he has cut off will drive by honking and clapping as he writes out the ticket. In those situations, he said, "I feel like I'm on my white horse."

On the other hand, there is the negative reaction.

"Some people think we write 100 tickets a day," Lane said. "We don't. I'd like to see a situation where we didn't write *any* tickets." However, he admitted "it would make a very boring day."

Headquarters radioed Lane to instruct him to cover the area of the interchange of I-10 and I-215 in case of problems from some work being done by the highway department on 215. Traffic was slowed because of this and some wide loads. We motored around the interchange, going from one freeway to another.

About 5:15 we were driving west on I-10, heading into the setting sun, when we spotted another speeder, traveling almost 65 mph. Lane pulled the small sedan over and went to talk to the driver. He soon came back with his ticket book still closed; he had let the driver off with a warning.

"There were extenuating circumstances," he explained. "He said he'd just pulled down his sun visor — he did, I saw that — and he was heading into the sun. Besides, everyone else was going almost as fast."

Lane continued his discussion of speeding.

"There will be more speeders out after commuter drive time," he said. "I don't like to chase speeders in heavy traffic. You have to do quick lane changes to get over to the shoulder."

Another hazardous situation: "I won't chase speeders in the rain," said Lane. "It's too dangerous when the freeways are slick."

Soon after he made these statements, he had to pull a violator over in moderately heavy traffic. It was a small red car that was following close on the tail of another car in the fast lane. It followed close until each car moved over, and then it went ahead and tailgated another.

"This is the end result of speeding," said Lane as he moved over to the number one lane and turned on his light. "You have to follow the violator close

(left)
Spotting a hazard on the freeway, Officer Lane radios the CHP headquarters to report it.

to get through the traffic."

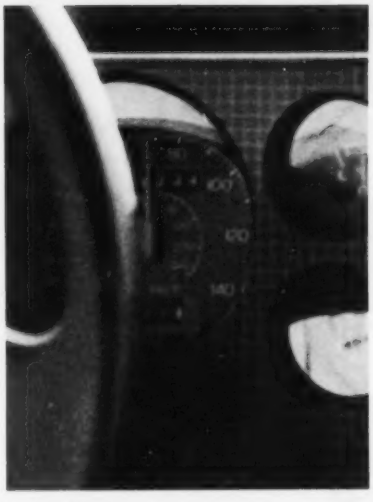
This one got a ticket. As always, Lane stood well back from the car on the passenger side while he wrote the ticket. He explained that this keeps him out of the driver's rearview mirror, provides him with cover in case of trouble, and keeps him closer to the shotgun.

Shortly before Lane dropped us off, he got a chance to show us the 'white door treatment' as we slid up beside a pickup hauling a dirt bike in the back. It worked pretty well; the driver slowed down.

Some people get the message.

(right)
CHP Officer Lane explains how the California Highway Patrol, which does not use radar, checks for speeders.

(below)
Lane switches on the red light to signal a speeder to pull over to the side.



(above)
This speedometer reads 70 mph, so the motorist being paced is well beyond the point of reasonable doubt.

WHY DRIVE 55?

The following information is from Special Report 204 of the Transportation Research Board, National Research Council, issued in 1984.

In 1974 the national maximum speed limit of 55 was set for the United States as a reaction to the oil embargo by Arab countries. That year, 9,100 fewer people died in automobile accidents than the previous year, a decline that was unprecedented in peacetime. This was due not only to the reduced speed limit, of course. The reduced amount of driving (due to gasoline shortages and economic factors) and the safety improvements in vehicles and highways were other factors. However, the 55 mph speed limit probably accounted for 3,000 to 5,000 of the reduction in lives lost in 1974.

The death rate has not risen back to pre-55 levels. The report states, "Adjusting for the reduction in the fatality rate during the last decade as well as the increase in travel and average speeds during that period, about 2,000 to 4,000 lives were saved in 1983 as a result of the 55 mph speed limit. In addition, about 2,500 to 4,500 fewer serious, severe, and critical injuries and 34,000 to 61,000 fewer minor and moderate injuries occurred in 1983 because of the slower speeds and more uniform pace of travel brought about by the 55 mph speed limit."

The 55-mph speed limit results in a savings of $2 billion annually in reduced consumption of petroleum and $65 million per year in reduced costs of medical and insurance programs.

Some everyday predicaments can call for all your driving skill.

ORDINARY EMERGENCIES

Just because something is dangerous doesn't mean it can't happen every day. The expression 'ordinary emergencies' is not the contradiction it sounds like. It can mean anything from running out of gas to hitting a car at the light by being a little slow on the brakes. Here, however, we mean those minor situations that can happen at any time, but can become hazardous through only slight mistakes.

Most people lose control of their cars through these slight mistakes, not because of some spectacular mishap. They get into a crisis situation, and their first act is to overdo their reaction; they overbrake, they oversteer, they overcorrect in some manner. This is when they 'lose control.'

Following are four more or less common occurrences that could also be called emergencies. Minor mistakes in any of these situations can cause major trouble.

RUNNING OFF THE ROAD

Running off the road can happen through inattention to the road, or because of severe crosswinds, or other causes. Minor mistakes in handling it can make it a very dangerous experience.

The danger is caused by the fact that the pavement is often higher than the shoulder, in some cases several inches higher. Also, the shoulder might be an unsure surface or even soft — mud, gravel or dirt.

Let's use the example of the right wheels going off the road. The car will have a tendency to pull right toward the shoulder because that surface is lower, so you might have to fight the steering wheel. Keep a tight grip on the wheel and steer straight.

Next, slow down. This is where the drivers make the mistake that causes the accident; they try to correct while the car is still moving rapidly and they skid out of control. Slow down by getting off the gas pedal. Stay off the brakes if possible but if you must use them, pump them and avoid locking the wheels.

When the car is sufficiently slowed and the traffic is cleared enough to permit returning to the road, turn the steering wheel sharply to the left to let the wheels climb back onto the road surface. Straighten the car and continue on.

If you must return to the road immediately because of some hazard, a tree or bridge abutment for instance, you won't have time to slow much. In this case, steer so that both front and back right wheels are about 12 inches off the pavement. Keep you foot off accelerator and brake, and steer sharply to the left. When the right front wheel gets onto the pavement, countersteer back to the right to center the car in the lane.

EVASIVE ACTION

Taking evasive action enables you to avoid a hazard, but slight mistakes during this action can make the situation worse. Evasive action can be done three ways — by steering laterally, by braking or by accelerating.

To steer around some object, put your hands at the '9' and '3' position on the wheel (this is the best position at all times). In this position, you can turn the wheel as much as a half turn (180 degrees). You may have to steer 160 to 180 degrees to go around the hazard. After that, immediately turn the wheel 320 to 360 degrees in the opposite direction and then back to the center of your lane of travel. Slight steering mistakes can put you where you don't want to be.

The American Automobile Association recommends steering to avoid a hazard when at all possible. The reason: At speeds greater than 25 mph, it takes less space to steer around an object than it does to brake to avoid hitting it.

When braking is the best way to avoid the hazard, use a short, quick pumping action to slow the car. This is called controlled braking. Avoid the mistake of slamming on the brakes and locking up the wheels because this will rob you of steering control. It could also increase the stopping distance.

In certain rare cases, accelerating to avoid the hazard is the right way. This is when you see danger approaching from the side or behind. If braking or lateral movement would be hazardous, you may want to speed up to get out of the way. Of course, this is only a good idea when the way ahead is clear.

SKIDS

Skids can happen on ice or on dry pavement, with the wheels spinning or locked up. What is really going on is the wheels have lost traction. Slight mistakes here can cause you to lose control of the car totally.

Since a skid means you have lost directional control of the car, you must avoid making that loss any worse. That means 'stay off the brakes.' If you brake hard, you will lock up the front wheels of the car. In such a case they can provide no steering control, no matter how much you turn the steering wheel.

To get the car back into line, you must countersteer. That is, you must steer in

continued

The shoulder of the road is lower, so use care in getting back on the pavement any time you run off the road.

Flat tires in traffic are dangerous. Firmly grip the wheel to maintain control until you are off the road. Do not try to change the flat when such work will put you in danger from passing traffic.

continued

the direction the rear of the car is skidding. Steering to straighten the car out is instinctive with most drivers. Do not oversteer as you correct. You must steer to straighten the front wheels the moment you feel the rear end come back into line. Be ready to countersteer in the opposite direction, if the car should skid that way.

There are three kinds of skids: Braking skids, power skids and cornering skids.

Braking skids are caused by braking too hard and locking the wheels. To get out of these, take your foot off the brakes so the wheels turn and you can steer. If you still need to brake, use less pressure on the brake pedal and pump the brakes lightly.

Power skids will happen most often on slick roads, when you press too hard on the gas pedal and the rear wheels lose traction. Ease off the accelerator and countersteer to regain control.

Cornering skids happen when centrifugal force in a turn causes the car to lose traction. The rear of the car will slide sideways. To stop the skid, ease up on the accelerator (you were going too fast!) and steer into the skid.

Evasive action refers to anything that will get you away from a hazard — lateral steering, braking or even speeding up.

Skids can happen on dry pavement as well as on snow and slush. Use countersteering to get out of a skid, rather than applying the brakes.

TIRE FAILURE

Tire failure. That's a fancy way of saying 'a flat.' When you have a blowout, you are in danger of losing control of the car. If the flat is on the front, the car will pull toward that side. If it's on the rear, the car may fishtail.

Keep a firm grip on the steering wheel and steer as necessary to hold the road. Never slam on the brakes. Ease your foot off the gas and let the car slow itself. When the car is under control — and only then — apply firm, steady pressure on the brakes. Get the car completely off the road.

Change the tire only on level ground where you have room to work without being in traffic. Even then, be ready to move away from the car *fast* if cars get too close to you. It's better to call for a tow than to risk being hit by passing cars. And it's better to drive on the flat, even if you ruin the tire completely, than to risk working where traffic is heavy.

(Our thanks to the American Automobile Association for the methods outlined in this article.)

FIGHTING RUST PRODUCES SAFETY SIDE EFFECTS

What's rust got to do with safety? More than you might think.

The crash protection designed into new cars depends on the vehicles' structures providing specified strengths at critical points. Because the majority of these crash related structures are metal, their strength can be effected by rust. The oxidation (rusting) of these structures weakens them over time and therefore lessens the protection they offer.

In other words, a five or 10-year-old vehicle is not going to offer the same crash protection as an identical new car if rust has gone unchecked.

Not only is rust a problem if the vehicle is involved in an accident down the road, but it can also cause accidents. For instance, if a critical suspension support were to be weakened by corrosion it could collapse, causing the loss of control. Additionally, there's the danger of carbon monoxide poisoning through rust-caused holes in the exhaust system.

Of course the auto makers are addressing these problems as can be seen with the four and five-year or 50,000-mile rust-through warranties they offer on many of their newer models.

Some of the all-new 1986 model cars will be among the most corrosion-resistant cars ever made. For example, the 1986 Oldsmobile Delta 88 and Buick LeSabre offer sheet metal galvanized on both sides of the hood and fenders. This rust-resistant steel is the state-of-the-art metal for corrosion resistance.

The two-sided galvanized steel is being used in the upper and lower engine compartments, the front and rear shock towers, the rocker areas, the inner door panels, the rear compartment pan and the floor pan. The floor pan also has received improved drainage provisions with an increased size and number of drainage holes. One-sided glavanized steel is used for the rear quarter outer panel extensions, and the entire underbody. In addition, the door outer panels fenders and hood are all zincrometal.

On the equally all-new Oldsmobile Toronado and Buick Riviera, all inner and outer body panels are two-sided galvanized. That means that the entire vehicle, with the exception of the roof, will be two-side hot-dipped galvanized. Testing indicates that this metal should prevent rust-through for a minimum of 10 years.

Another area receiving improved corrosion protection is the exhaust system. The Toronado will feature a new stainless steel system. This system provides improved corrosion protection in one of the vehicle's most susceptible areas, particularly for the habitual short-distance driver. It will be a welded, modular built system that runs from the manifold through the tailpipe. By using modular construction, the use of clamps, which often result in noise and misalignment, has been avoided.

As you can see the battle against rust is pushing forward with the cosmetic benefits being reinforced by additional safety protection.

(above)
Because of extensive use of two-sided galvanized steel, the 1986 Oldsmobile Toronado is among the new corrosion-resistant cars. The Toronado also features a new stainless steel exhaust system for improved corrosion protection.

WINTER RIDER

by LT Rob Robertson
FPO San Francisco 96601-6421

The time of the year has come for all those individuals dedicated to cruising down the byways and highways astraddle their trusty bike to put away their sun shades, clean the bugs from their teeth and settle in for a long, cold and often dangerous winter. The hard-core motorcycle enthusiast will not easily give up the freedom of two wheels merely for the creature comfort of driving an automobile during the inclement winter months. Others have only a bike as their primary means of transportation, year round. For these rugged individuals who find themselves mounted up this winter there are several factors that need to be taken into consideration, to keep you safe and alive, that are not normal safety considerations the remainder of the year.

Foremost, and always, your bike should be checked for good running operation. Brakes should be checked for stopping power when you need it. Tire tread is critical for good traction on wet roads. Oil viscosity should be checked and changed to suit your local environment and driving needs, and batteries checked for charge to ensure your machine starts on the coldest days.

Once your bike is ready to test the elements, how about you? What kind of personal riding equipment will make your winter rides more enjoyable and safe? For starters, no one should ever ride a motorcycle without head protection. This holds particularly true during the winter due to the increased probability of putting your bike down in a skid caused by adverse driving conditions. Why risk disability or death for the minor inconvenience of wearing a helmet? In addition to keeping your pointy head off the road, a good helmet will protect you from the cold. Eye protection in the form of a face shield or full coverage helmet is also a must. It's tough to see where you're going while squinting against the cold or rain. Next you will need a set of good gloves or mitts. How good depends on your climate, but they should always provide the protection and warmth to prevent your hands from becoming rigid from cold, possibly causing slow reaction to clutch or front brake operation.

Warm boots are obviously in order and again depend on the climate and type of driving you do. Lastly, but very important, is a warm, wind resistant and waterproof riding suit. Cold can rapidly debilitate the hardest rider to the point of reduced coordination of mind and body, resulting in drastically increased reaction time to any situation. A good set of riding coveralls will provide protection from the elements and provide relative comfort during your ride while allowing you to concentrate on the road, not your shivering body.

Now that your bike and body are protected against the winter weather, here are some key tips to ensuring you and your bike make it safely through the winter. The most common and most insidious of winter elements is rain. It reduces your ability to see and the ability of others to see you. Most importantly, your stopping distance is almost doubled on wet roads, and the possibility of skidding and losing control of your bike is greatly increased. To avoid a spill make it a rule of thumb to decrease your speed slightly and double your normal interval while following traffic in wet weather. Start braking for intersections or lights well ahead of normal and give turn signals prematurely to keep the guy behind you from running you down. Reduce speed even further in curves. Oil buildup on the center of each lane can become deadly to a bike in a curve.

A major threat to both automobiles and motorcycles alike in many areas is the presence of black ice. It is extremely difficult to see and is most prevalent along bridges and shaded stretches of road. Become familiar with the conditions that make black ice a possibility and the most probable areas of accumulation along your route. Encountering black ice on your bike under the best of circumstances could very likely ruin your day.

Lastly, avoid riding in snow and ice. Realize that even for the most steadfast biker, headwork should prevail. The risk of riding on two wheels in these conditions is too high to take, so shake off your pride and take a bus or join a car pool.

The fundamental keys to safely taking on the fickle whims of winter on a motorcycle boil down to just these three:

1. Dress warmly.
2. Slow down.
3. Use your head.

Your bike can be your pride and joy, or it can be your death. Winter driving allows too few concessions to a careless motorcycle rider, so be prepared for not-so-easy riding and ride safely.

In the old west the marshalls identified the fact that men under the influence of alcohol had no business being in possession of a firearm, read that "dangerous weapon," and we here at RAF Greenham Common, England, feel that an automobile should be treated as a dangerous weapon.

We have a policy, which was approved by a unanimous vote at a general membership meeting, that club members could voluntarily check their car keys, read that "gun," upon entering the club, said keys to be returned to the individual upon leaving the club only if the person could pass a breathalyzer examination. If the person could not pass the examination, then alternative ways to get home would be made. One of the alternatives is . . .

DIAMOND CLUB TAXI SERVICE

by SMSgt Frederick L. Elsass

Here at RAF Greenham Common, England, the Diamond Club (First Sergeants) have initiated a program by which any member assigned to this wing can have a taxi available to him with no money up front. This gives personnel an alternative to Driving Under the Influence, being stranded with a broken car, or being stranded after having lost his money.

The Diamond Club drew up a simple contract with a local cab company (the contract was approved by the local Staff Judge Advocate) that the cab company would transport any member of this wing with no cash changing hands on the word of the First Sergeants that the company would receive their money upon billing. The billing is done once a month. Cab fares can be from the base to quarters, quarters to base and within a 25-mile radius of the base.

The program works as follows:

1. Member calls cab company.
2. Cab company calls command post and verifies member belongs to the wing.
3. Cab driver is dispatched.
4. Driver verifies member by the identification card.
5. Transports member.
6. Bills Diamond Club.
7. First Sergeants collect money.
8. Give money to treasurer of Diamond Club.
9. Treasurer pays cab company.

This agreement can be with First Sergeants, Chiefs Group or any group of trusted personnel on the base.

We have had 85 personnel use this program in the last five months with no questions asked as to why they used it.

CROSSWORD PUZZLE ANSWER

BACK COVER

S	O	A	P	■	H	E	A	R	
	F	I	L	T	E	R	S		
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ABS IS

The years of waiting are finally over. Anti-lock Brake Systems (ABS) will finally be available on American-made cars in the 1986 model year. These are the same systems that have been offered on European cars for years. Although they have attained a high technical standard they make up between five and 10 percent of the price of the vehicle for you, the customer.[1]

ABS have been available on some imported German cars recently, and last year they were an option on the Lincoln Continental Mark VII. For the 1986 model year they will be standard equipment on both the Lincoln Continental and Lincoln Continental Mark VII and the Chevrolet Corvette. ABS will also be optional on the Oldsmobile 98, Buick, Electra, Cadillac De Ville and Fleetwood, and Pontiac 6000 STE.

These computer-controlled systems sense wheel speed and traction, allow controlled braking by preventing wheel lock-up during sudden stops or during braking on low co-efficient road surfaces.

But they do more than merely take the skid-marks out of panic stops. Activated whenever there is a marked disparity in the wheel speed, the system superimposes its logic over a driver's foot. The systems automatically control wheel lock-up during hard braking, and allow the driver to retain steering control. Any tendency for the car to spin is greatly reduced and can be readily countered by steering correction.

"The ABS system monitors wheel speeds at each wheel," explained David S. Sharpe, Buick chief engineer. "If, during braking, those speeds differ from predetermined limits, indicating onset of locking, the computer automatically adjusts hydraulic pressure to each brake. The result is maximum braking, with control, on all kinds of road surfaces."

The system will not be noticeable under normal driving conditions, Sharpe said. Only when ABS senses the onset of a locking wheel will the driver feel a slight pulsation of the brake pedal under his or her foot.

ABS replaces the normal vacuum booster with an electric pump and hydraulic booster. Pressure is stored in an accumulator to supply the system during normal braking as well as in the anti-lock mode. During anti-lock braking, seven solenoid valves control the supply of pressure to each wheel. Each front wheel can be controlled independently; the two rear wheels are controlled together, although either can signal the need for anti-lock braking.

The electronic control module for the ABS contains two 4K microprocessors which calculate wheel speed and acceleration/deceleration. The microprocessors also monitor the integrity of the system: supply pressure, fluid level, speed sensor integrity, and solenoid valve integrity.

As sensor signals are received from the four wheels, the electronic control calculates values for vehicle speed and compares them to the wheel speeds and other predetermined criteria. It produces command signals for the solenoids to use in maintaining exactly the proper amount of hydraulic pressure.

On any road surface, extreme braking pressure (such as "panic stop") without ABS could cause a four-wheel skid. Because the tires are sliding, steering abili-

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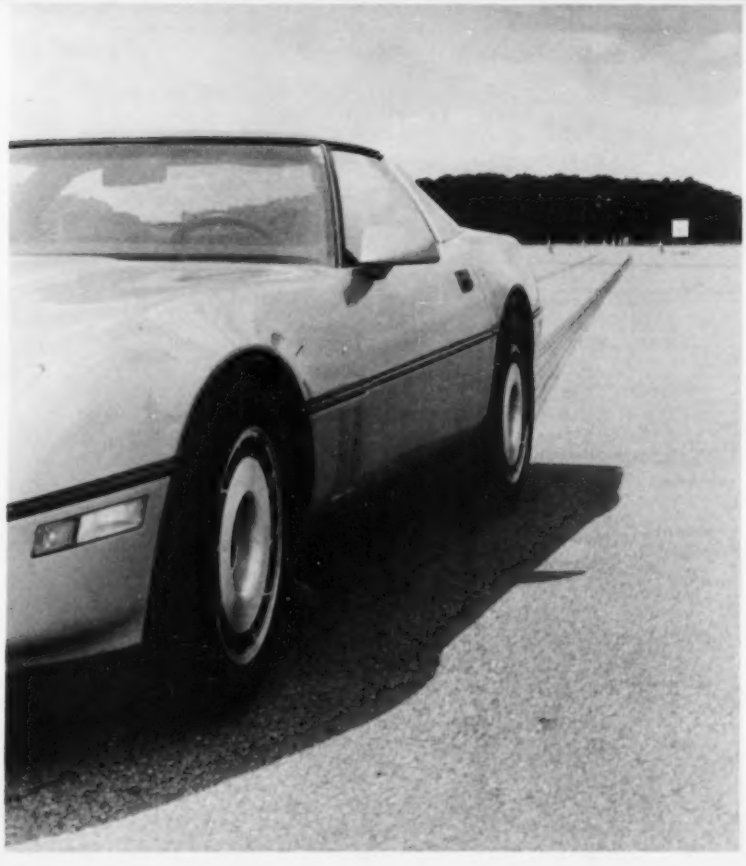
[1]*Society of Automotive Engineers Technical Paper #850053, "Cost-Benefit Analysis of Simplified ABS," by Peter Hattwig, supervisor of Brake Testing, Research and Development, Volkswagenwerk AG, Wolfsburg, Germany.*

HERE

(below)
Identical '86 Corvettes perform panic stops from 85 mph on the "Black Lake" at the General Motors Proving Grounds. The vehicle closest to the camera has a working anti-lock brake system, while the other vehicle does not.



ty is lost. This condition is eliminated with ABS.

Each time ABS is used, it learns to brake properly for the specific incident by reading the way the tire reacts to the road surface within the first few milliseconds. These data are used by the system to optimize brake pressure during the stop for maximum control.

ABS contains several built-in system monitors to watch for the remote possibility of partial system failure. If the anti-lock system should fail, an amber "Anti-Lock" indicator will illuminate. The driver will still have normal braking available, but without the anti-lock feature. In a "worst-case" situation, such as total electrical failure, 10 to 20 stops still are possible with the pressure remaining in the accumulator. Even when this pressure is exhausted, the driver still can bring the car to a stop by braking normally, but with increased pedal effort.

continued

The 'Vette without ABS not only took longer to stop but, as the skid marks indicate, was sliding out of control. This Corvette is known as "Thumper" because of the noise it made when driven away from the demonstration, having ruined a $1,000 set of tires.

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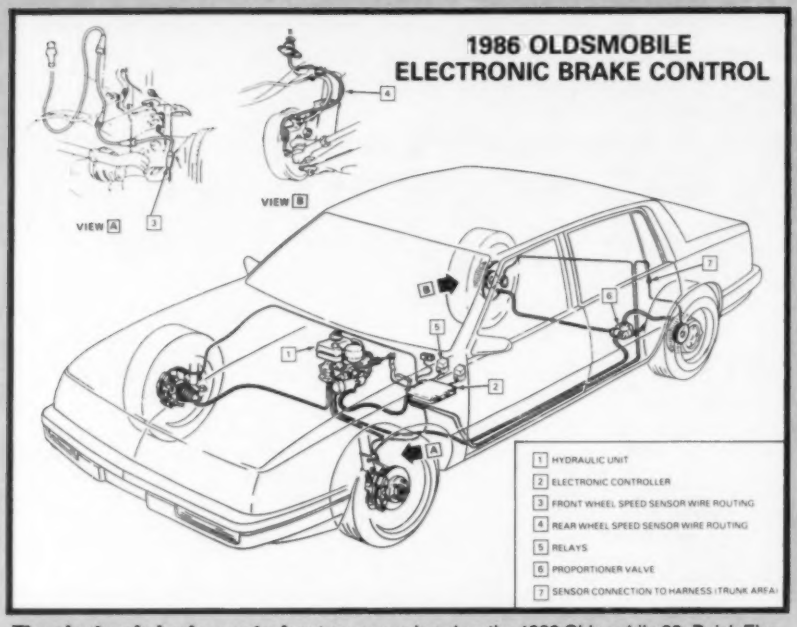
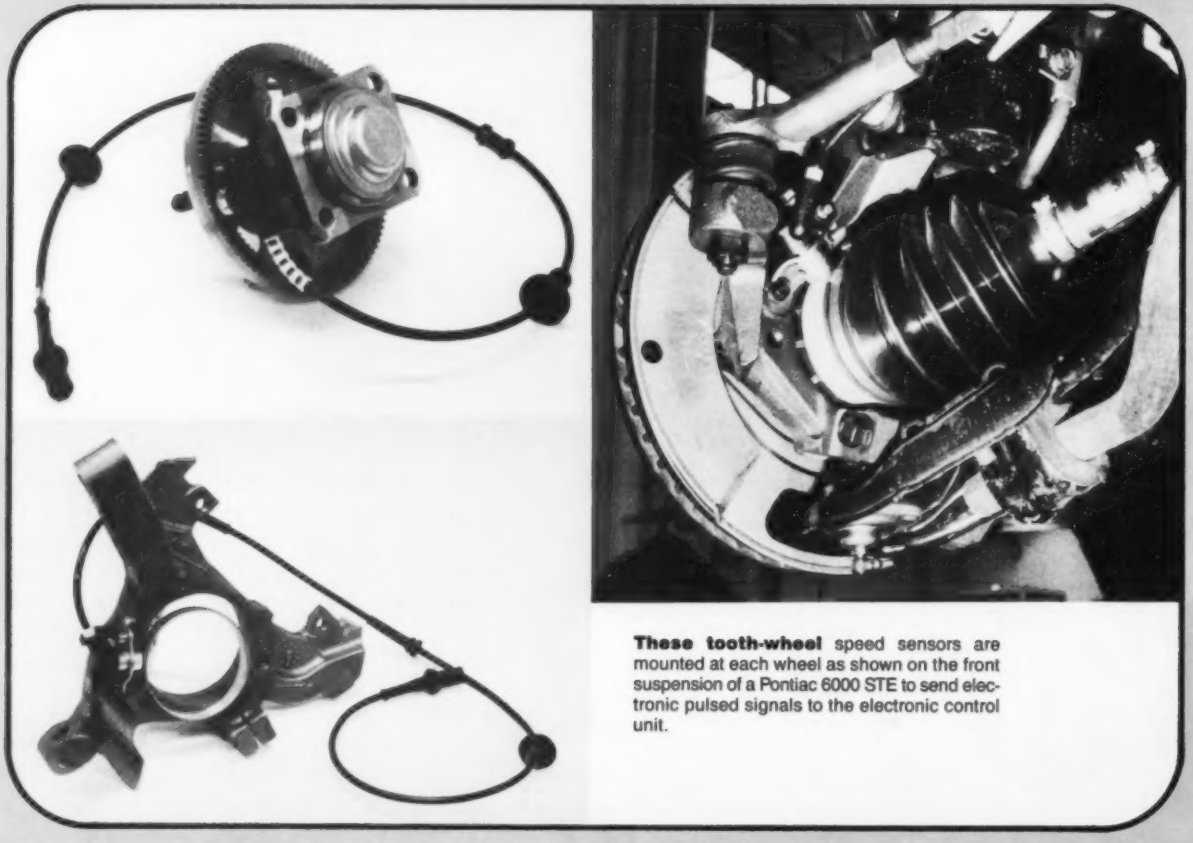
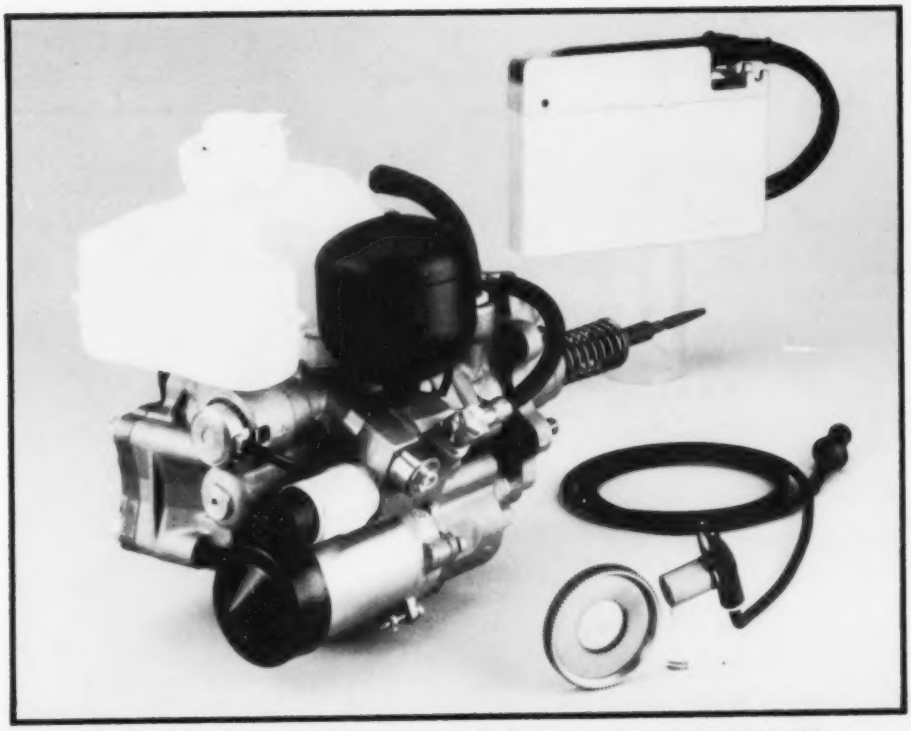


The electronic brake control system as employed on the 1986 Oldsmobile 98, Buick Electra, Cadillac De Ville and Fleetwood, and Pontiac 6000 STE.



These tooth-wheel speed sensors are mounted at each wheel as shown on the front suspension of a Pontiac 6000 STE to send electronic pulsed signals to the electronic control unit.

These three 1986 models come with anti-lock braking systems as standard equipment. They are the Lincoln Continental, Lincoln Continental Mark VII and Chevrolet Corvette.



There are two microprocessors in the electronic control unit (top right) that process data from the transducers at each wheel (lower right) and produce a control signal for the electro-hydraulic unit (left).

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ABS is an option for 1986 on the Pontiac 6000 STE, Cadillac De Ville (and Fleetwood), Buick Electra and Oldsmobile 98.

1 = Hydraulic Booster
2 = Anti Lock Master Cylinder
3 = Anti Lock Valve Block
4 = Electric Motor
5 = High Pressure Pump
6 = High Pressure Accumulator
7 = Pressure and warning Switch
8 = Reservoir
STE Anti-Lock Braking System

The integral booster incorporates an electric motor, pump, reservoir, accumulator and valve block in a unit that requires no more space than a conventional vacuum booster and master cylinder.

FINAL 1985 CRASH TEST RESULTS

VEHICLE	SPEED/WEIGHT	HIC Driver/Pass	CHEST G'S Driver/Pass	FEMUR LOADS Driver left/right	FEMUR LOADS Passenger left/right
BMW 318I 2-Dr Sedan	35.0 / 2944	1539 / 547	41 / 39	64 / 296	597 / 185
CHEV (SUZUKI) SPRINT 2-Dr Hatchback	35.1 / 2042	1787 / 1799	52 / 39	434 / 674	832 / 1419
FORD E-150 Club Wagon van	34.9 / 5237	1986 / 1198	55 / 50	1193 / 2139	1806 / 1065
FORD TEMPO GL 2-Dr Sedan	35.1 / 2996	1551 / 1449	63 / 46	2798 / 542	736 / 391
ISUZU I-MARK 4-Dr Sedan	34.8 / 2850	1514 / 1543	38 / 47	535 / 365	398 / 385
ISUZU TROOPER II 2-Dr (4x4)	35.0 / 3606	916 / 2189	58 / Lost Data	745 / 1901	133 / 357
TOYOTA 4-RUNNER 2-Dr (4x4)	35.5 / 3897	1478 / 949	64 / 52	1400 / 243	570 / 317
TOYOTA MR-2 2-Dr Sedan	35.3 / 2918	655 / 515	34 / 34	238 / 61	612 / 327
MAZDA B-2000 Pick-up (1986)	35.0 / 3080	1434 / 1647	65 / 58	620 / 97	628 / 311

The National Highway Traffic Safety Administration (NHTSA) recently announced it has completed its New Car Assessment Program for 1985 with the release of results of nine motor vehicle crash tests.

All the vehicles were crashed in frontal tests at 35 mph into a fixed barrier. This is five miles per hour faster than the prescribed speed for compliance with federal motor vehicle safety standards. The crash tests are designed to indicate, for vehicles within the same size class, the relative levels of occupant protection and vehicle safety performance.

NHTSA said that while the test results are indicative of relative crash protection provided to occupants wearing safety belts, it is important to emphasize that, in the government's crash test program, only one car of any given make and model is crashed in a specific test. Subsequent crash test results for any vehicle could vary because of differences in the way cars are manufactured and equipped or due to slight variations in test conditions.

Instrumented dummies are used in all tests, and they are protected by the vehicles' standard safety belt system. The head, chest and upper legs of the dummies are equipped with instruments which monitor impact forces and accelerations. The head acceleration is used to calculate the head injury criterion (HIC), a measure of the potential for head injury.

In general, the lower the HIC, the less likely drivers and front-seat passengers would be seriously injured or killed in a frontal crash at 35 mph. A HIC value of 1,000, a chest deceleration of 60 G's (G is a unit of acceleration), and a femur (thigh) load of 2,250 pounds indicate approximate threshholds above which serious injuries are expected.

Other aspects of safety performance also are monitored, including whether the vehicles retain the windshield during the crash, prevent displacement of vehicle parts into the windshield area, and maintain the integrity of the entire fuel system to prevent leakage of fuel in a crash.

Of the nine most recently tested vehicles only the BMW 318i failed any of the additional tests. It failed to retain its windshield.

The experimental New Car Assessment Program began in 1979. The agency is continuing to examine several aspects of the program, such as the variability in test results and the relationship of these tests to real world accidents, in order to improve crashworthiness information provided to consumers.

The accompanying chart shows the test results for the nine vehicles most recently crashed. The 21 previous model year 1985 test results can be found in the March, April, May and June issues of DRIVER.

The Backyard Mechanic

OLDER CARS

There's reason to believe that with your increased knowledge and the proper care your car can provide reasonable transportation for years after you've stopped making payments on it. However, like your favorite dog, your car will require a little additional attention the older it gets.

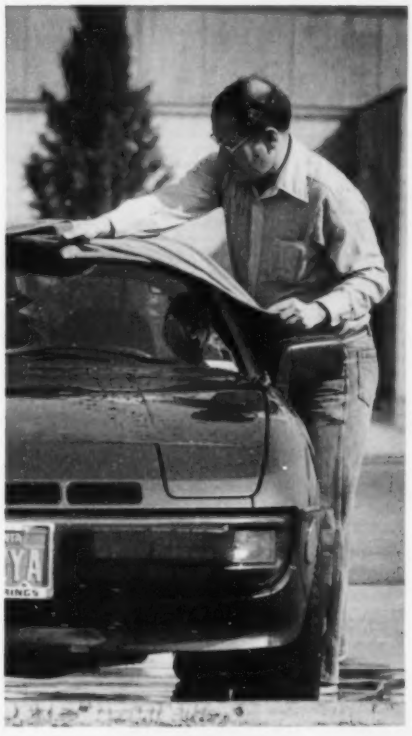
Both your old car and old dog need exercise as much as ever, although neither can bear the strain of sudden and violent exertion. Just as your dog's digestion may not be as good as it was as a puppy, your vehicle will need special feeding the older it gets, too.

Failing eyesight or hearing mean lessened awareness of dangers, so you must protect your old dog more than before. The same is true for your car: You have to pay closer attention to it to spot dangers before they become failures or, worse, accidents.

The old dog is used to his home, and to set ways, so too many strangers are bound to be a strain. For the same reason, boarding him out or a trip to the vet's are to be avoided unless absolutely necessary. This works a bit the same with old cars. You've made adjustments in your driving habits to compensate for the older car that you may not even be aware of. To let an uninitiated operator behind the wheel could only spell trouble for everybody and everything involved.

As was pointed out in the July 1985 Backyard Mechanic, the risk of having an accident because of a mechanical failure increases with the vehicle's age. Cars that are six to eight years old are four times more likely to have accidents because of defects than are cars that are two years old or less. Those vehicles 12 to 14 years old are about 10 times more likely to have defect-related accidents than two-year-old cars. When plotted on a graph, the risk seems to level off after about seven years, only to rise again at 12 years.[1]

(top)
This 1985 Thunderbird can be in just as good condition 30 years from now as is the 1955 two-seater with the proper care.



(left)
Washing a car regularly is just as important as any mechanical maintenance in helping the vehicle survive the battle of time.

(below)
Touching up nicks, clips and scratches is critical in fighting rust.

(left)
Tomorrow's car can be a beautiful classic like the Cadillac 1931 dual cowl Phaeton with pre-planned, regular maintenance.

First of all, you're going to feel better about your vehicle and know more about its condition if you keep it clean. Start with the engine, engine compartment, drive train and chassis. A spray-on water-soluble degreaser and running warm water should remove most of the dirt. A small wire brush can be used to remove rust from the exhaust manifold. Stubborn stains may require the use of lacquer thinner on a soft rag.

With the engine, its compartment, the drive train and chassis completely clean you can easily check for leaks, oil stains, rust and other signs of developing trouble.

Of course, now that the mechanical parts of the vehicle are clean, it would be a good idea to keep them that way. Small cans of spray paint available at all auto parts stores, including the large discount chains, make engine finishing easy. Make sure that paint used on exhaust manifolds, mufflers and exhaust pipes is rated for very high temperatures. Polish chrome or aluminum parts with paste cleaner. And coat all unpainted metal, rubber and plastic with silicone spray.

continued

[1]*Society of Automotive Engineers technical paper 850434, "Investigation of the Technical Defects Causing Motor Vehicle Accidents," by Jurgen Grandel, DEKRA (German Motor Vehicle Inspection Association)*

continued

Allow the silicone to dry and then buff with a soft cloth. Periodically respray these surfaces with silicone.

Now beautify that exterior that everybody sees. By doing this regularly, you can observe little trouble spots before they develop into terminal Michigan cancer — rust. Before waxing the car, you'll want to clean it thoroughly and remove the old, dead paint with a polish, not rubbing compound. Abrasive rubbing compounds can remove all the paint, leaving nothing but bare, rust-prone metal. Be especially careful around striping because even polish can remove these from the paint.

You'll also want to take care of all those nicks, clips and scratches before making the exterior shine. Be sure to completely clean the area to be touched up of all dirt and old wax or silicone. Use a small No. 1 or No. 2 artist brush, building the paint up in layers. If you get a lacquer paint you can wipe off any mistakes.

Now that the vehicle has been cleaned and touched up, you can make it shine and protect its finish at the same time by covering all exterior paint and chrome with a paint sealant. This silicone compound prevents air from oxidizing the paint. The base coat sealant must be put on before any wax is applied. If the vehicle has already been waxed, the wax will have to be completely removed with a solvent. After the base sealant coat is applied, there is a conditioning coat that must be put on every six months. It's as easy as washing and waxing.

Of course hard driving puts a strain on many components, too.

The best exercise for your car is 20 miles of continuous highway driving.

At least once a month you'll want to wash the entire car with a mild soap and warm water. Always rinse the surface completely and dry with a turkish towel. Be sure to clean off road tar and other stains. The solvent rustproofers usually work best. Touch up any new dings and scratches, finishing them over with sealant conditioner or bolster.

There are several good cleaners and conditioners on the market for vinyl roofs. Remember to silicone them when done.

Window glass is always cleaned with an ammonia glass cleaner and paper towels.

If you're using a wax, rewax every three months. The silicone conditioner is an every-six-months job.

Alloy wheels should be cleaned with specially-made wheel cleaners, usually available from wheel makers through their dealers. To protect wheel appearance, use heavy-duty wheel wax or two coats of silicone spray. Also, spray both sides of the tires with silicone as well as silicone-spraying plastic bumpers.

If you haven't already, you should invest in a car cover. Even if you garage your vehicle, the dust in there can damage the finish. When the car is outside, sunlight, dust, dirt and pollution take their toll on the surfaces. The best car covers are water repellent, not water proof. Water-proof covers don't allow the car's finish to breathe. Moisture trapped under a cover can blister the paint.

A word of caution about car covers: In windy areas they can whip around, scratching the surface and generally doing more harm than good.

OK, you've got the mechanical parts cleaned for inspection and the exterior polished so that others see you in a shiny vehicle; now it's time to clean the inside where you live. Much like your home, you clean the inside from the top down. Vacuum the headliner or convertible top as well as the seats and carpet. Vinyl headliners, door panels, seats, dashboards and weatherstripping should be cleaned with a non-abrasive vinyl cleaner on a soft cloth. Treat all cloth as "dry clean only."

Use a leather spray cleaner for leather. Then replenish lost lanolin with a "hide food." Always completely wipe off ex-

(top)
Change the oil and filter regularly to ensure a longer engine life.

(top right)
Keeping your vehicle away from the elements will go a long way toward helping it stay in tip-top condition.

(right)
Good quality car covers protect a car's finish no matter where you park it, including inside a garage.

cess cleaners, conditioners and saddle soap, especially from cracks, because they can make the hide too soft and it will pull apart. Flexible leather putty can be used to fix cracks and splits.

Clean doors and door jambs with household spray cleaners. Lacquer thinner works good here for removing grease.

Carpet can be cleaned with cornstarch, a brush and then vacuumed; or with home foam-style carpet cleaners. Grease stains can be removed with ketone or acetone. If you have a spot where the colors don't match, there are aerosol dyes that can be used. If you can't find the correct color, use acrylic lacquer paint.

If you have real woodwork that has been varnished, clean it with glass cleaner. Household polishes may give a nice shine, but they turn yellow. Use lemon oil finish on unvarnished woodwork.

Interior bright metals such as chrome, aluminum, magnesium, brass and stainless steel are best cleaned with an ammonia glass cleaner. Paste metal cleaners tend to get on everything around the metal, making a real mess.

Now spray everything that isn't fabric (or glass) with silicone and buff. Everything from the dash to the weatherstripping. You may want to use a special leather protectant, but silicone will do the job. Wax the door jambs and ends. Use upholstery stain-proofing spray on fabrics.

You'll want to install coco or sisal floor mats to protect the carpet. While they don't keep dirt out as well as rubber or vinyl, they allow the carpet to breathe.

As for your older vehicle's actual health, again it's much like your older dog's. It is based on many factors not the least of which are what you put into it and what you demand out of it.

Even if your older engine will run on leaded gasoline, use unleaded if at all possible. Lead additive deposits build up on the spark plugs and other internal engine parts as well as in the oil, muffler and exhaust system, cutting each part's life span.

Always use a high detergent oil of the weight recommended by the manufacturer. These oils cling to cylinder walls and bearing surfaces, preventing start-up scoring.

The oil and filter must be changed regularly, whether the vehicle is driven or not. Everyday use contaminates the oil with dirt and partially-burned hydrocarbon resins, while the oil in engines that aren't run regularly breaks down into a gooey sludge that has a high acid effect. And always change the filter with the oil. A dirty filter only contaminates the clean oil.

How often is regularly? For an older car, anything beyond 3,000 miles or every third month is too long an interval. That is if the manufacturer originally recommended 7,500-mile or every six months changes. If your car is old enough to have originally had shorter recommended oil change periods, adjust its schedule accordingly.

Perhaps the biggest determinant to your car's life span is your driving hab-

continued

continued

(top)
Following a regular maintenance schedule is part of helping your car live a long life.

(left)
Your driving habits have a lot to do with your vehicle's life span. Stop-and-go commuting is probably the hardest.

its. Stop-and-go commuting to work or driving slowly to the corner store and back are among the worst. Perhaps the best exercise for your engine is 20 miles of continuous highway driving. This raises the oil temperature to a normal operating range, coats bearing surfaces with oil and lifts the entire block to an even temperature. Heating up the engine and auxiliary systems in this way burns off many of the corrosive deposits. These deposits came from water vapor built up in the system during all those short trips.

This 20-mile exercise will also bring to light problems that may have been overlooked in day-to-day commuting.

The basic idea is to keep an eye on parts that could give you trouble and replace them before they fail. This not only brings you peace of mind, but such replacements are usually cheaper than service on items that failed while in use.

Figuring out what to keep an eye on and what to replace when isn't as difficult as it may seem. Many shop manuals have preventive maintenance programs printed in them. Other good sources for information about what-to-do and when-to-replace are service managers and mechanics who work on your type vehicle.

With most replacement items, it is far more economical to buy top quality units than their less-expensive equivalents. For example, high-quality shock absorbers will last 100,000 miles instead of the 10,000-mile life span of original equipment shocks. Besides having to be replaced less often, the $40 units provide a smoother ride and better handling than $10 ones. As another example, a top quality $100 clutch will last three or more times longer than a $50 unit.

The same theory applies when it comes to buying new parts instead of rebuilts.

It's also a good idea to replace entire "systems" rather than just units. When you buy a new battery, replace the cables, too. Or when replacing brake linings, why not take care of the wheel bearings and wheel cylinders at the same time?

Remember, the idea is that it is cheaper to do the maintenance now than wait for the item to break. For instance, a front-end alighment at $15 for labor is far less expensive than the cost of two or more $100-apiece tires.

To give you a basic idea what program for an older vehicle looks like, here's a plan for a conventional front-engine/rear-wheel-drive American-made vehicle. This guide is only a reference point from which you can develop your own program.

Every **week**
check:
- Engine oil level
- Tire air pressures
- All exterior lights
- Brake operation
- Emergency brake operation
- Horn

Every **month**
check:
- Battery fluid level
- Windshield washer fluid level
- Coolant level
- Air conditioner belt

(right)
Of course everything here applies equally to trucks.

- Tire wear
- Brake fluid level
- Power steering fluid level
- Power steering belt
- Spare tire pressure
- If you haven't been using the air conditioning, run it at full for at least five minutes

Every **three months** or **3,000 miles**

check:

- All drive belts
- Starter connections
- Alternator connections
- Radiator hoses
- Clutch play
- Radiator cap pressure
- Manifold heat valve
- Air conditioning system for leaks
- Air conditioning refrigerant level
- Windshield wiper blades
- Windshield washer system

Lubricate:

- Front suspension (Note while ball joints, control arm pivots and tie-rod ends should last 100,000 miles, the grease does get contaminated with dirt and water. Install grease fittings in those vehicles with "lifetime" lubrication systems, and lubricate the front suspension every 7,500 miles or twice a year with the highest quality molybdenum disulfate lithium grease.

Adjust:

- Engine timing

Rotate:

- Tires
- Put a coat of conditioner or wax on the exterior of the vehicle as well as respray everything with silicone.

Every **year** or **15,000 miles**

check:

- Entire brake system
- Tire tread depth
- Shock absorbers
- Engine mounts
- Steering linkage
- PCV valve
- Sparkplug wires
- Rear axle fluid level

Replace:

- Sparkplug, points and condenser (not on CDI systems). If your vehicle doesn't already have an electronic ignition, think about replacing the ignition system with one to increase performance as well as part life.
- In-line filter
- Windshield wiper blades
- Coolant, after flushing and back flushing radiator and block separately

(left)
Keep track of all maintenance and repairs you make.

- Automatic transmission fluid and filter

Lubricate:

- Universal joints
- Shifting linkage
- Wiper linkage
- Hood release
- All body hinges

Adjust:

- Dwell
- Clutch pedal free travel

Clean:

- Air filter

When the car is **2 years old** or has **30,000 miles** on it

continued

continued

Check:
- Emission-control system

Replace:
- All drive belts
- Air Filter
- Sparkplug wires
- Distributor cap and rotor (not on CDI units)
- Crankcase breather air filter
- Manual transmission gear lubricant
- Differential gear lubricant

Adjust:
- Automatic transmission
- Front suspension and steering
- Automatic choke

When the car is **3 years old** or has **40,000 miles** on it

Check:
- CDI for voltage output
- Wheel bearings; always repack and replace seals

Replace:
- Radiator cap
- All hoses
- PCV valve
- Original equipment shock absorbers

When the car is **4 years old** or has **50,000 miles** on it

Check:
- Emission-control system

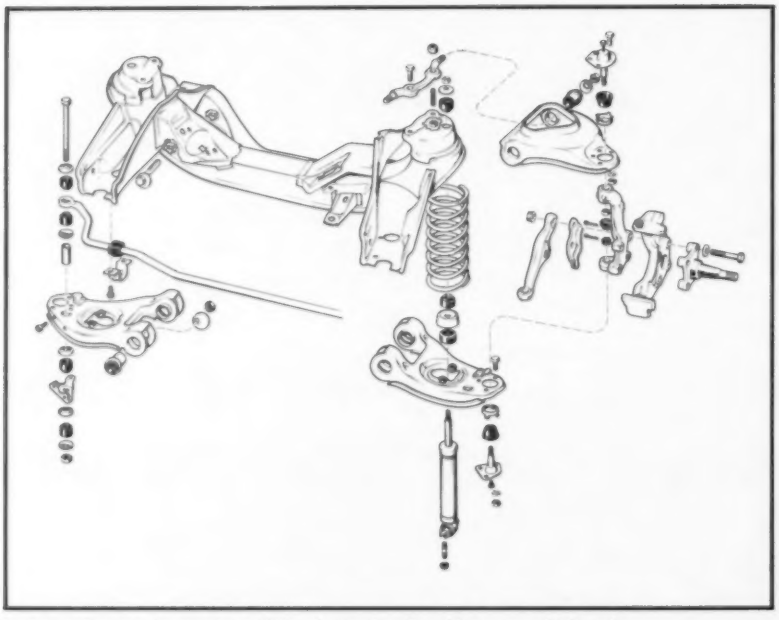
Replace:
- All drive belts
- Air Filter
- Sparkplug wires
- Distributor cap and rotor (not on CDI units)
- Crankcase breather air filter
- Battery and cables
- Coil
- Brake linings, wheel cylinders and master cylinders
- Tires
- Manual transmission gear lubricant
- Differential gear lubricant

Adjust:
- Automatic transmission
- Front Suspension and steering
- Automatic choke

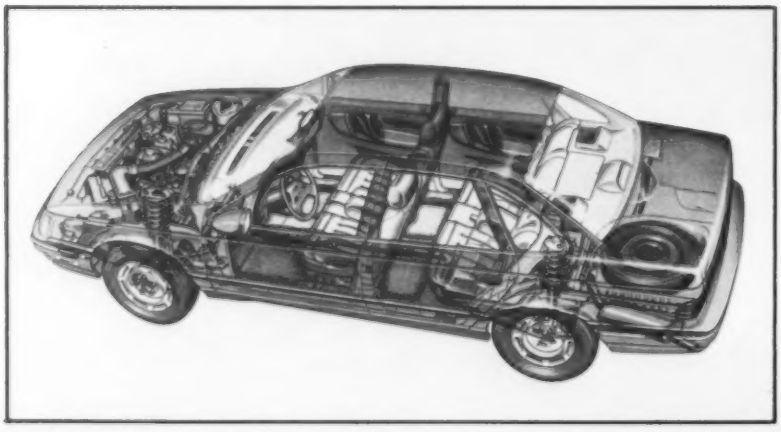
When the car is **5 years old** or has **60,000 miles** on it

Replace:
- All light bulbs
- All fuses
- Complete exhaust system including catalytic converter
- Manual transmission clutch

When the car is **6 years old**



Suspension parts require additional attention the older your vehicle gets.



Front-wheel-drive vehicles require individual adjustments in their long-term maintenance schedules.

(below)
It's best to repair damage as soon as possible to prevent a small problem becoming a major disaster.

Check:
- Emission-control system
- CDI for voltage output
- Wheel bearings: always repack and replace seals

Replace:
- All drive belts
- Air Filter
- Sparkplug wires
- Distributor cap and rotor (not on CDI units)
- Crankcase breather air filter
- Manual transmission gear lubricant
- Differential gear lubricant
- Radiator cap
- All hoses
- PCV valve
- Original equipment shock absorbers

Adjust:
- Automatic transmission
- Front suspension and steering
- Automatic choke

When the car is **7 years old** or has **70,000 miles** on it

Replace:
- Thermostat
- Water pump
- Tie-rod ends
- Steering idler arms

When the car is **8 years old** or has **80,000 miles** on it

Check:
- Emission-control system

Replace:
- All drive belts
- Air filter
- Sparkplug wires
- Distributor cap and rotor (not on CDI units)
- Crankcase breather air filter
- Manual transmission lubricant
- Differential gear lubricant
- Battery and cables
- Coil
- Brake linings, wheel cylinders and master cylinders
- Tires
- Wheel bearings
- Ball joints
- Tie-rod ends
- Steering idler arms

Adjust:
- Automatic transmission
- Front suspension and steering
- Automatic choke

When the car is **9 years old** or has **90,000 miles** on it

Check:
- CDI for voltage output

Replace:
- Radiator cap
- All hoses
- PCV valve
- Carburetor complete with choke
- Starter and solenoid
- Alternator
- Voltage regulator
- Power brake booster
- Power steering pump

By now you should have the idea. By the way, at 10 years old or 100,000 miles a $450 paint job isn't unreasonable (don't get the $69 paint job because that's what it looks like — a cheap paint job). You can also expect to spend a similar amount for chrome to make your pseudo-classic look showroom fresh.

Even with the best care you can give it, your vehicle will still need to be seen by a trained technician with the latest equipment.

Backfire LETTERS TO THE EDITORS

JOGGERS

Your May 85 issue has a picture with a short observation on the back cover titled "Will He Stop?" The picture is of an intersection in California where the base is located. At crosswalks (marked or not) the vehicles do not have the right of way over pedestrians. (I believe joggers are pedestrians). Running into the street without due caution should not be condoned; however, in the western United States pedestrians are usually treated with respect. Your article indirectly minimizes the responsibility a driver has while moving three thousand pounds of metal in close proximity to other human beings. It is tough getting exercise with work and family commitments, so let's share the responsibility on the roads. Encourage jogging safety and stress the driver's responsibility. I would have preferred to have read in the article a seasonal warning to drivers now that joggers and children are out in larger numbers. Encouraging the attitude that joggers do not pay attention is unfair.

Glenn Crabtree
Lancaster CA 93535

Thank you for your letter about our May back cover. The scene is inside a major gate here at Norton. The cars do have the right of way because the guard is directing them in and out. These joggers are not so much inattentive as unwilling to break their rhythm. Note that we emphasized this is an on-base problem which is not seen outside the gates.

BEEF ABOUT WORD-SEARCH PUZZLE

I read Driver Magazine whenever I can get a hold of a copy, which isn't too often, and I think that you have a superb magazine. I really enjoy the articles and maintenance tips that are in it. The only beef I have is with the word-search puzzle that you put on the back page of the April 85 issue. Whoever laid out the press plates really messed up the spacing in the letters of the puzzle, making it very hard to try to find the words, even though I did find them all without using the answer key. Other than that, keep up the good work.

Sgt. Dariel S. Campbell, USMC
Camp Lejeune NC 28542

Thanks to all of you who wrote about the "crooked" solutions in our puzzle. When the type was set, allowance was not made for the fact that M's and W's are wider than I's, etc. So those straight lines got mighty wavy when you solved the puzzle. This was the first such puzzle we ever printed — we've learned how to do better!

INCLUDE THESE SAFETY WARNINGS TOO

Reference your May 1985 issue, AFRP 127-1, Volume 18, Number 12, The Backyard Mechanic, The Pre-Trip Safety Check, page 22.

There are certain safety warnings that I think should have been included under some of the pictures of safety checks.

- "All drive belts . . ." should have included a warning for those cars with heat sensitive fans that turn on automatically to be careful when placing hands near the fan.
- "Also check hoses . . ." should have included a warning to do it only when engine is not hot anymore.
- "Check the cooling system . . .;" same comment on checking hoses.
- "The air conditioning . . .;" same as drive belts.
- "Give the entire . . ." from a realistic standpoint is difficult to check the brake pads. If attempting this through a visual inspection, make sure the car engine is not running when sticking your hand in the fender well while the wheel is turned fully to the right or left.

Overall, I applaud your efforts over the years to attempt to make DOD employees more conscious of vehicle safety. As a practical matter you should publish the results of studies that reflect a direct relationship between this increased consciousness and reduction in traffic accidents.

My recommendations are based on previous jobs in DOD and personal experience as a "backyard mechanic."

Walt Michalski
Alexandria VA 22333-0001

Your safety points are well made, but you forgot such important ones as "don't check the belts when the engine's running."

However, we don't understand why you think checking the brake pads is not realistic. It's as easy as changing a tire. With the vehicle jacked up (and properly supported with jack stands) you remove the wheel and the pads are easily visible.

AUDI HIC NUMBER CORRECT?

I have a question regarding the crash results printed in your June 1985 issue. For the Audi 5000S you showed a driver's HIC as 2105 while the passenger only had 557! All the other results for the Audi were far below the serious injury level you stated. I find it hard to believe that one figure would be so far off from the others. Was this a typo? If so, what is the correct figure? If not, do you know why that one area would be so different? I'm particularly interested because I'm thinking of an Audi for my next car.

I read your magazine from cover to cover every month and always learn something new. Keep up the good work!

Capt. Celia A. Garland, USAF
Grand Forks AFB ND 58205

The HIC numbers are correct. There can be marked difference between the seating positions.

DISTURBED BY COVERS

I just received the June 1985 Driver and under the cover you did your usual outstanding job. As an avid motorcyclist and Motorcycle Safety Foundation instructor, I am always interested and usually educated by your motorcycle articles, but the covers (front and back) disturbed me greatly. All of that added weight (especially high on the bike) has a significant impact on the center of gravity, handling and braking characteristics of the bike. The increased vision obstruction to the rear and use of a single mirror are also areas for concern. The validity of the "restraint system" is highly questionable.

Indicating that Mr. Winiecki holds patents for the additions implies credibility where none exists. Patents are for new products, not necessarily proper or safer ones. His license plate "SAFEST" is

merely his opinion, not shared by this rider. Most dangerous of all is the impression these photos will give to non-motorcyclists. Well intentioned commanders may leap upon this as the "cure" for their "motorcycle problems."

Please continue to push for hands-on training and the wearing of proper protective gear but leave out the bizarre; it hurts more than helps.

Gary W. Ridgway
Luke AFB AZ 85309-5000

You raise some valid questions, but our purpose in using the photos was just to point out the most important bit of safety equipment — the motorcycle helmet. We think well-intentioned people, riders and non-riders alike, should focus their attention there.

IMPORTANT TO LOCK DOORS TOO?

Though I haven't read all of the issues your magazine has ever put out, I am still searching for an answer . . . "Is it important to lock your vehicle doors as well as buckle up?" I have learned there is a large percentage of fatal accidents involving the victim being thrown from the vehicle. Could you satisfy my conscience with some information on locking your vehicle doors and also some statistics on fatal accidents involving a person or persons being thrown from a vehicle to their death?

I enjoy your very informative magazine and appreciate your professional time.

Sgt. Darryl W. Leatherman, USMC
Spring Valley CA 92077

Manufacturers have greatly improved door design so doors don't often pop open in crashes. The Society of Automotive Engineers recently published a paper which says that in roll-over crashes, side glass areas are the main portals of ejection for unrestrained occupants. If you drive an older car you might want to lock the doors, but in any model car the most important thing is to buckle up! Of course, the crime prevention people advise keeping doors locked, but that's for another reason.

ANOTHER MOTORCYCLE SAFETY COURSE?

While looking through your May '85 issue I noticed a reference in the True Accidents column to "Air Force Course VII, Motorcycle Challenges" (pg 13, clm 1). I've already taken part in two different M.C. safety courses, found them as much fun as they were educational, and would be very much interested in other courses. I hadn't heard of this particular course before and would like to know if it's open to members of other service branches and who I can contact. If you have any info on the course, could you please print it or let me know?

Thanks for your time and for putting out DRIVER with the pride and care that's shown in your work.

ET2 Randy S. Reed, USCG
Silver Spring MD 20910

Course VII has been discontinued since the time of that true accident. In its place is the Better Biker Program of the Motorcycle Safety Foundation. Contact the nearest Air Force base to find out its availability to non-Air Force people.

SELDOM WORE SEAT BELTS UNTIL . . .

I was recently reading your letter to the editor column in the May issue of Driver Magazine and thought I would share a personal experience of my own. I was stationed at RAF Alcobury in the United Kingdom from July 81 to Aug 83. In July of 1982 my newlywed wife and I were driving around in a rental car looking to buy a car. We were parked in a pub parking lot going through the local newspaper when I looked up just in time to see an MG Midget and a Volvo station wagon hit head on. Both vehicles were going well over 40 mph.

I should state that I very seldom wore seat belts before this accident. After the MG flipped a couple of times I got out of my car and ran over to the Volvo. There I found an Air Force officer unconscious and bleeding from the mouth and ears. I looked over to the passenger side of the car and saw a 10-year-old girl with her seat belt on. She most likely would have gone through the windshield if not for the protection of that seat belt. Her father was also wearing a seat belt. The local authorities arrived and took over the situation. The man in the MG was not as fortunate as the other party was. He was not wearing a seat belt and was critically injured. Whereas the man and small girl were both released from the hospital within a week, he spent months in a hospital bed. From that moment on, I wore my seat belt. I saw something I never want to see again, but I'm glad that what I saw was two people who survived a major accident by wearing seat belts.

Sgt. Troy A. Marcukaitis, USAF
Keesler AFB MS 39534

PERSONAL SAFETY GEAR NOT ENOUGH

I would like to relate to your readers a motorcycle accident which occurred in the city of Chicago on April 29, 1984.

While returning from downtown Chicago on my Suzuki 550, with a passenger, I came across a man-hole cover six inches below the surface of the road. Not able to change lanes, I stopped to avoid hitting it at 35 mph. In the process, I was hit from behind by a passenger car. My passenger was thrown against the back rest and fell over. I was forced up in the air and landed on my feet. Note: My passenger and I each wore a helmet, gloves, boots and jacket. The time was approx 2215, the road was dry, visibility good and lighting fair. Had it not been for the back rest, my passenger would have been thrown into the car's windshield. He suffered a fractured leg when hit by the car's bumper, I walked away uninjured. I'm grateful no other injuries occurred. All four occupants in the car were wearing seat belts.

I believe that the point being made here is that personal safety gear is not always enough. If the motorcycle is equipped with items to prevent injuries, i.e. backrest, fairing, in case of a mishap, perhaps the more serious injuries will be avoided.

Sn. Peter T. Gallagher, USCG
Wilmette IL 60091

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DRiVER

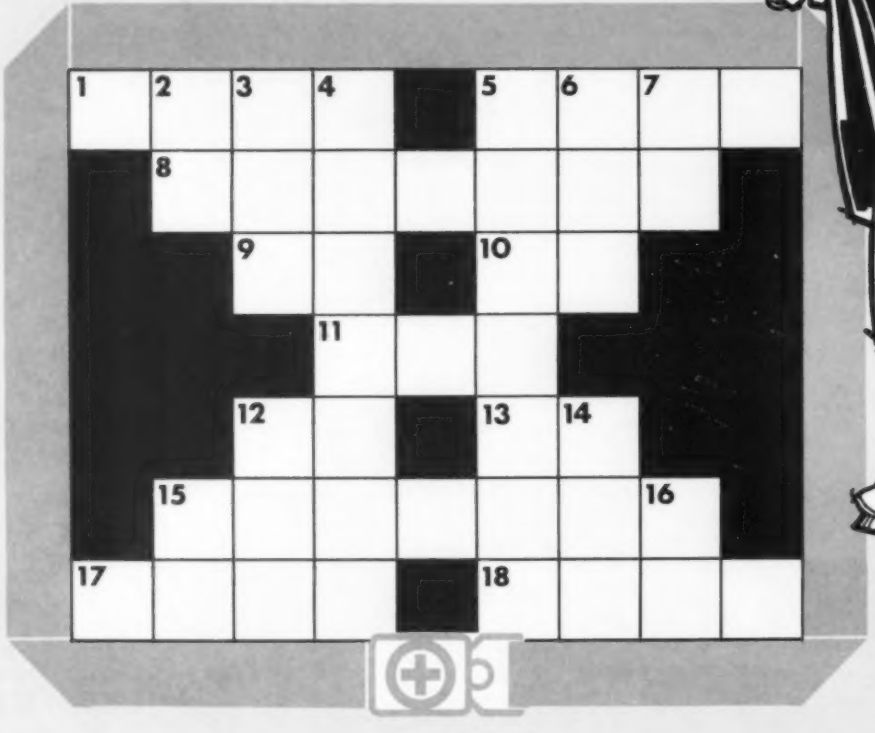
Safety Crossword Puzzle

by Tina Palmer

ACROSS

1. Used to clean a car
5. Listen
8. Air and oil
9. Do, ____, mi, fa
10. So, ____, ti, do
11. Idler ____
12. Overdose (abbrv)
13. 19th letter in alphabet
15. Naps (in Spain)
17. Not hot
18. Where a driver sits.

DOWN

2. "The Scene ____ the Crime" (DRIVER, Apr 85)
3. Tire's need
4. What a speeder did to the policeman to try and get out of his ticket.
5. Motorcyclists' necessity
6. Equal Rights Amendment (abbrv)
7. While
12. Helps the engine run
14. Society of Automotive Engineers (abbrv)
15. Thus
16. South America (abbrv)

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